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VHF FM

VX-160V/-180V

Service Manual

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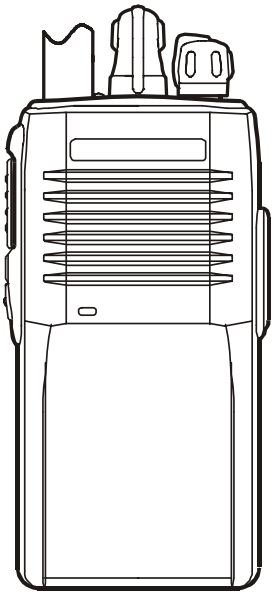
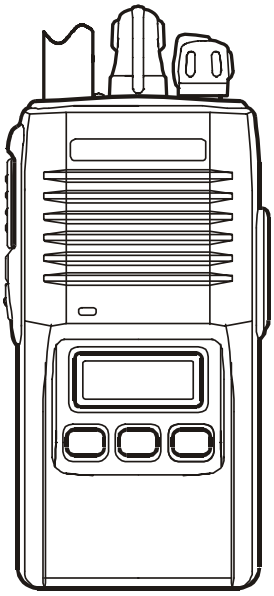


VX-160V



VX-180V

Introduction

This manual provides technical information necessary for servicing the VX-160V and VX-180V FM Transceiver.

Servicing this equipment requires expertise in handling surface-mount chip components. Attempts by non-qualified persons to service this equipment may result in permanent damage not covered by the warranty, and may be illegal in some countries.

Two PCB layout diagrams are provided for each double-sided circuit board in the transceiver. Each side of is referred to by the type of the majority of components installed on that side ("leaded" or "chip-only"). In most cases one side has only chip components, and the other has either a mixture of both chip and leaded components (trimmers, coils, electrolytic capacitors, ICs, etc.), or leaded components only.

While we believe the technical information in this manual to be correct, VERTEX STANDARD assumes no liability for damage that may occur as a result of typographical or other errors that may be present. Your cooperation in pointing out any inconsistencies in the technical information would be appreciated.

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GENERAL Specifications

Frequency Range (MHz):	134 - 160 (TYP A) 146 - 174 (TYP C) 142 - 176 (TYP CS1)
Number of Channels:	16 channels
Channel Spacing:	12.5 / 25 kHz (15 / 30 kHz)
PLL Steps	2.5 / 6.25 kHz
Power Supply voltage:	7.5 VDC ± 20%
Operating Temperature Range:	–22°F to +140°F (–30°C to +60°C)
Frequency Stability:	±2.5 ppm
Dimensions (WHD):	2.3" (W) x 4.7" (H) x 1.2" (D) (58 x 120 x 31 mm)
Weight (approx.):	0.81 lb. (365 g) w/FNB-64

RECEIVER Specifications (Measurements made per EIA standard TIA/EIA-603)

Sensitivity	
EIA 12 dB SINAD :	0.20 µV
20 dB Quieting :	0.30 µV
Adjacent channel selectivity:	65 dB (25 kHz) / 60 dB (12.5 kHz)
Intermodulation:	65 dB
Spurious and Image Rejection:	65 dB
Hum & Noise	45 dB
Audio output:	500 mW @4 Ohms, 5% THD

TRANSMITTER Specifications (Measurements made per EIA standard TIA/EIA-603)

Power output:	5.0 / 1.0 W
Modulation:	16K0F3E, 11K0F3E
Conducted Spurious Emissions:	60 dB Below Carrier
FM Hum & Noise:	40 dB (25 kHz) / 35 dB (12.5 kHz)
Audio distortion (@ 1 kHz):	< 5 %

Measurements per EIA standards unless noted above. Specifications subject to change without notice or obligation.

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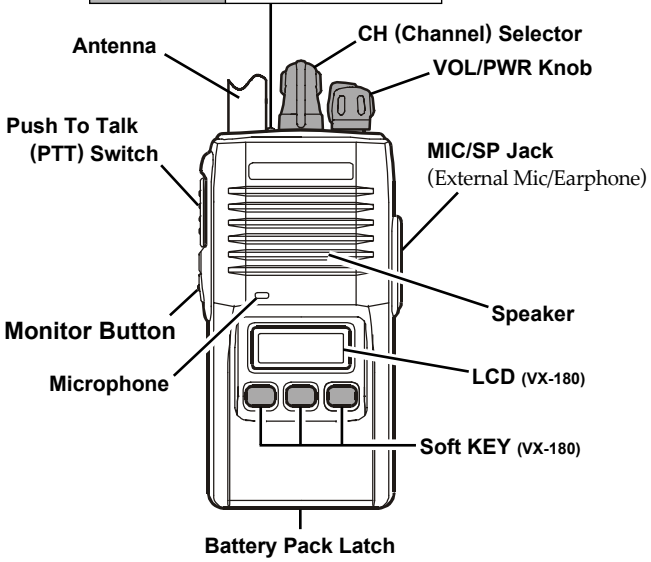
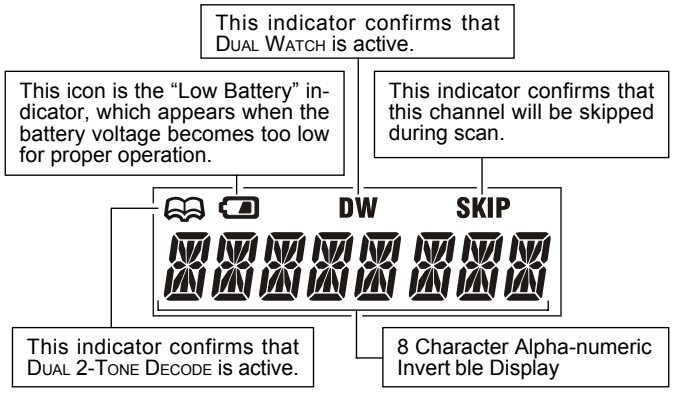
Controls & Connectors

LED Indicator

Glows Green	Monitor on
Blinking Green	Busy Channel (or SQL off)
Glows Red	Transmitting
Blinking Red	Battery Voltage is low
Blinking Yellow	Receiving a Selective Call



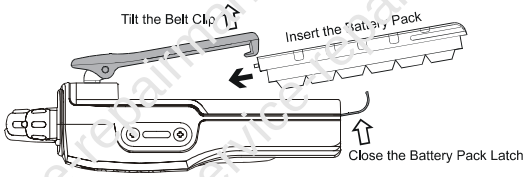
Display Icons & Indicators (VX-180 Only)


This indicator confirms that DUAL WATCH is active.
This icon is the "Low Battery" indicator, which appears when the battery voltage becomes too low for proper operation.
This indicator confirms that this channel will be skipped during scan.
DW
SKIP
This indicator confirms that DUAL 2-TONE DECODE is active.
8 Character Alpha-numeric Invert ble Display

Before You Begin

Battery Pack Installation and Removal

❒ To install the battery, hold the transceiver with your left hand, so your palm is over the speaker and your thumb is on the top of the belt clip. Insert the battery pack into the battery compartment on the back of the radio while tilting the Belt Clip outward, then close the Battery Pack Latch until it locks in place with a "Click."



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❒ To remove the battery, turn the radio off and remove any protective cases. Open the Battery Pack latch on the bottom of the radio, then slide the battery downward and out from the radio while holding the Belt Clip.

Caution!

Do not attempt to open any of the rechargeable Ni-Cd packs, as they could explode if accidentally short-circuited.

Low Battery Indication

❒ As the battery discharges during use, the voltage gradually becomes lower. When the battery voltage becomes to low, substitute a freshly charged battery and recharge the depleted pack. The **TX/BUSY** indicator on the top of the radio will blink ***red*** (on the **VX-180**, the "🔋" icon will appear on the LCD) when the battery voltage is low.

❒ Avoid recharging Ni-Cd batteries often with little use between charges, as this can degrade the charge capacity. We recommend that you carry an extra, fully-charged pack with you so the operational battery may be used until depletion (this "deep cycling" technique promotes better long-term battery capacity).